

Claims

1. (currently amended) In an audio encoder with a quantization loop, a method comprising:

encoding audio, including:

_____ reconstructing a block of spectral data for the audio, the block of spectral data quantized as plural quantization bands;

_____ processing the reconstructed block of spectral data as plural critical bands according to an auditory model, wherein the plural critical bands are variable relative to the plural quantization bands with respect to one or more of number and position; and

_____ measuring quality of the reconstructed block of spectral data; and
outputting the encoded audio in a bitstream.

2. (currently amended) The method of claim 1 further comprising wherein the encoding further includes:

before the quantization loop, applying a quantization matrix to the block of spectral data, thereby quantizing the block as the plural quantization bands;

quantizing the block of spectral data with a uniform, scalar quantization step size that is adjustable in response to one or more feedback criteria.

3. (original) The method of claim 2 wherein the reconstructing comprises:

inverse quantizing the block of spectral data with the quantization step size; and
inverse weighting the block of spectral data by the quantization matrix.

4. (original) The method of claim 2 wherein the one or more feedback criteria are based at least in part upon the measured quality and a bitrate criterion.

5. (original) The method of claim 1 wherein the measured quality is a ratio between a noise pattern and an effective excitation pattern for the block.

6. (original) The method of claim 1 wherein the reconstructing comprises an inverse multi-channel transformation.

7. (original) The method of claim 1 wherein the measuring comprises applying a set of band weights for the block.

8. (original) The method of claim 1 wherein the measuring comprises measuring quality for each of the plural critical bands of the reconstructed block of spectral data.

9. (original) The method of claim 1 wherein the measuring comprises measuring quality for each of the plural quantization bands of the reconstructed block of spectral data.

10. (currently amended) A computer-readable medium having encoded therein computer-executable instructions for causing a computer programmed thereby to perform a method of measuring audio quality of a block of spectral data, the method comprising:

encoding audio, including, in an iteration of a quantization loop,

reconstructing a block of frequency coefficients for the audio, the block of frequency coefficients quantized as plural quantization bands;

processing the reconstructed block as plural critical bands according to an auditory model, wherein the plural critical bands are variable relative to the plural quantization bands; and

measuring quality of the reconstructed block; and

outputting the encoded audio in a bitstream.

11. (currently amended) The computer-readable medium of claim 10 further comprising wherein the encoding further includes, in the iteration of the quantization loop:

adjusting quantization level as necessary to satisfy one or more loop criteria.

12. (original) The computer-readable medium of claim 10 wherein the plural critical bands differ from the plural quantization bands in one or more of number and position

13. (original) The computer-readable medium of claim 10 wherein the reconstructing comprises an inverse multi-channel transformation.

14. (original) The computer-readable medium of claim 11 wherein the quantization level is a quantization step size, and wherein a quantization matrix and quantization band boundary matrix establishes the plural quantization bands before the iteration.

15. (original) The computer-readable medium of claim 10 wherein the measured quality is a ratio between a noise pattern and an effective excitation pattern for the block.

16. (original) The computer-readable medium of claim 10 wherein the block has a variable size, further comprising normalizing the block before the processing.

17. – 59. (canceled)

60. (new) An audio encoder with a quantization loop, the encoder comprising:
means for encoding audio, wherein the encoding includes:

reconstructing a block of spectral data for the audio, the block of spectral data quantized as plural quantization bands;

processing the reconstructed block of spectral data as plural critical bands according to an auditory model, wherein the plural critical bands are variable relative to the plural quantization bands with respect to one or more of number and position; and

measuring quality of the reconstructed block of spectral data; and
a multiplexer for outputting the encoded audio in a bitstream.

61. (new) The encoder of claim 60 wherein the encoding further includes:
before the quantization loop, applying a quantization matrix to the block of spectral data, thereby quantizing the block as the plural quantization bands;
quantizing the block of spectral data with a uniform, scalar quantization step size that is adjustable in response to one or more feedback criteria.

62. (new) The encoder of claim 61 wherein the reconstructing comprises:
inverse quantizing the block of spectral data with the quantization step size; and

inverse weighting the block of spectral data by the quantization matrix.

63. (new) The encoder of claim 61 wherein the one or more feedback criteria are based at least in part upon the measured quality and a bitrate criterion.

64. (new) The encoder of claim 60 wherein the measured quality is a ratio between a noise pattern and an effective excitation pattern for the block.

65. (new) The encoder of claim 60 wherein the reconstructing comprises an inverse multi-channel transformation.

66. (new) The encoder of claim 60 wherein the measuring comprises applying a set of band weights for the block.

67. (new) The encoder of claim 60 wherein the measuring comprises measuring quality for each of the plural critical bands of the reconstructed block of spectral data.

68. (new) The encoder of claim 60 wherein the measuring comprises measuring quality for each of the plural quantization bands of the reconstructed block of spectral data.